

REMARKS

Status of the Claims

Claims 1-22 are pending, with Claims 1, 14 and 22 being independent. Claims 1, 14 and 15 have been amended. Claim 22 has been added. Support for the new claims and claim changes can be found in the original disclosure, for example, in Figure 4 and the accompanying description, and therefore no new matter has been added.

Requested Action

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendments and the following remarks.

Formal Claim Rejection

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification allegedly does not disclose a non-mirror surface as recited in Claim 1. In response, while not conceding the propriety of the rejection, Claim 1 has been amended to delete the term “non-mirror”, thereby obviating the rejection. Therefore, Applicants respectfully request that the formal rejection of Claim 1 be withdrawn.

Substantive Claim Rejection

Claims 1-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,216,952 (Mou) in view of U.S. Patent No. 5,844,730 (Aikawa et al.).

In response, while not conceding the propriety of the rejection, independent Claims 1 and 14 have been amended. Applicants submit that as amended, these claims are allowable for the following reasons.

Independent Claim 1 relates to an image reading apparatus for reading an image of a document, comprising an image reading unit configured to read the image of the document, an illuminating unit configured to illuminate the document, a plurality of mirrors configured to reflect light from the document, a housing configured to support the plurality of mirrors, the housing including a mirror supporting part, wherein at least one of the plurality of mirrors comprises a surface, a curved reflecting mirror surface, opposite from the surface, and two contact portions, disposed on a side of the mirror on which the curved reflecting mirror surface is provided and contacting the mirror supporting part of the housing, configured and positioned to determine the position of the curved reflecting surface in a direction normal to the surface thereof when the two contact portions contact the mirror supporting part of the housing.

Claim 1 has been amended to recite a protuberance being disposed at a position corresponding to a reference axis of the curved reflecting mirror surface, wherein the protuberance of the mirror is inserted in a concave portion of the housing.

By this arrangement, even if the mirror expands to a greater extent than the mirror supporting part due to a rise in temperature, the position of light rays reflected by the curved reflecting mirror surface along the reference axis does not change, thereby reducing the deterioration of image formation and improving the accuracy of image formation with the mirror when the temperature rises, as discussed in paragraph [0038] of the published version of the application, U.S. Patent Publication No. 2004/0066544. One non-limiting

example of this feature are projecting parts 28 or 29 shown in Figure 4. In Figure 4, the intersection point of a line defined by the bosses 26 and 27 and a line defined by the projecting parts 28 and 29 corresponds with the position, on the surface of the mirror, where the rays along the reference axis are reflected. Using projecting parts disposed at this position, the position of light rays reflected by the curved reflecting mirror surface along the reference axis does not change when the temperature increases and the mirror expands to a different extent from its supporting structure, as discussed in paragraph [0038].

In contrast, the citations to Mou and Aikawa et al. are not understood to disclose or suggest a protuberance being disposed at a position corresponding to a reference axis of the curved reflecting mirror surface, wherein the protuberance of the mirror is inserted in a concave portion of the housing, as recited by amended Claim 1.

Page 9 of the Office Action states that Mou discloses a projecting part “(Fig. 2 El.225 shows a projecting portion of the mirror which is used to project light ray “A” to be light ray “B”) being disposed at a position corresponding to a reference axis of the reflecting mirror surface (Col. 2 Lines 53-62 - Fig. 2, El.225 and 224 - thus the angle between the mirrors 225 and 224 forms a reference axis as it can be seen clearly from fig. 2), wherein the projecting part of said mirror is inserted in the portion of the housing (Col. 3 lines 20-31 - thus the mirror is inserted in the recess 2291 and a hook 2292 and this will engage the mirrors in place during scanning).”

But, amended Claims 1 and 14 now recite a protuberance disposed at a position corresponding to a reference axis of a curved reflecting mirror surface. Figure 2 of Mou is understood to merely show a flat mirror 225 without a protuberance. And neither column

2, lines 53-62, nor column 3, lines 20-31 is understood to provide any disclosure a) that the flat mirror has a protuberance, b) that the protuberance is disposed at a position corresponding to a reference axis of a curved reflecting mirror surface, or c) that the protuberance of the mirror is inserted in a concave portion of the housing, as recited by amended Claims 1 and 14. In addition, these portions of Mou are not understood to disclose or suggest that even if the Mou mirror expands to a greater extent than the mirror supporting part due to a rise in temperature, the position of light rays reflected by the mirror along a reference axis does not change, thereby reducing the deterioration of image formation and improving the accuracy of image formation with the mirror when the temperature rises, as discussed in paragraph [0038] of the published version of the application, U.S. Patent Publication No. 2004/0066544.

Therefore, amended Claim 1 recites at least one feature not understood to be disclosed or suggested by the cited art. Accordingly, the Office is not understood to have yet satisfied its burden of proof to establish a prima facie case of obviousness against amended Claim 1, since MPEP § 2142 requires the cited art to disclose or suggest *all* the claimed features to establish a prima facie case of obviousness. Therefore, Applicants respectfully request that the rejection of amended Claim 1 be withdrawn. And because Claim 14 has been amended to recite the same features, Applicants respectfully request that the rejection of amended Claim 14 be withdrawn.

New independent Claim 22 recites an image reading apparatus for reading an image of a document, comprising an image reading unit configured to read the image of the document, an illuminating unit configured to illuminate the document, a mirror configured to reflect and guide light from the document to the image reading unit, the mirror including

a curved reflecting mirror surface, and a housing configured to support the mirror, the housing including a concave portion. Claim 22 also recites that the mirror comprises a protuberance being disposed at a position corresponding to a center of the curved reflecting mirror surface, and wherein the protuberance of the mirror is inserted in the concave portion of the housing.

In contrast, the citations to Mou and Aikawa et al. are not understood to disclose or suggest that the mirror comprises a protuberance being disposed at a position corresponding to a center of the curved reflecting mirror surface, and wherein the protuberance of the mirror is inserted in the concave portion of the housing, as recited by new Claim 22. Therefore, new Claim 22 is understood to be allowable over these citations.

The dependent claims are also submitted to be patentable, due to their dependency from the independent base claims, as well as due to additional features that are recited. Individual consideration of the dependent claims is respectfully solicited.

Applicants submit that this Amendment After Final Rejection clearly places the subject application in condition for allowance. This Amendment was not presented earlier, because Applicants believed that the prior Amendment placed the subject application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 C.F.R. § 1.116.

Conclusion

In view of the above amendments and remarks, the application is now in allowable form. Therefore, early passage to issue is respectfully solicited.

Any fee required in connection with this paper should be charged to Deposit
Account No. 06-1205.

Applicants' undersigned attorney may be reached in our Washington, D.C. office
by telephone at (202) 530-1010. All correspondence should continue to be directed to our
below-listed address.

Respectfully submitted,

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